



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/624,687

07/23/2003

Sung-Nam Lee

030681-543

6695

21839

7590

09/15/2005

BUCHANAN INGERSOLL PC  
(INCLUDING BURNS, DOANE, SWECKER & MATHIS)  
POST OFFICE BOX 1404  
ALEXANDRIA, VA 22313-1404

EXAMINER

NGUYEN, TUAN N

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/624,687	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> Tuan N. Nguyen	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07/23/2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10, 11, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 7-9, 12-15, 18-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>06/06/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
2. Claims 1-6, 10, 11, 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over PRIOR ART in view of Botez et al. (US 5889805).

With respect to claim 1, Prior Art (Fig 1: 1-9) shows a semiconductor optoelectronic device comprising an active layer, and upper wave and lower waveguide on and under active layer (Fig 1: 4,7), an upper and lower cladding on and under upper and lower waveguide (Fig1: 3,8), a substrate (Fig 1: 1). The claim further requires an upper and lower optical confinement layers provided between the active layer and the upper and lower waveguide having an energy gap that is smaller than those of upper and lower waveguide but greater than that of the active layer. Botez et al. '805, disclose the active region with confinement layer, cladding layers, and

Art Unit: 2828

substrate. It would have been obvious to one of ordinary skill in the art to provide PRIOR ART the optical confinement layer as taught or suggested by Botez, et al. '805, for the benefit of aligning or guiding the active laser light.

With respect to claim 2,10, 11, the claims further require that the electronic blocking layer interposed between upper waveguide and upper optical confinement layer. PRIOR ART (Fig 1: 6) shows electronic blocking layer interposed between the upper waveguide and active layer, it has been held that rearranging parts of an invention involves only routine skill in the art, in this case where the electronic blocking layer is located to control the wavelength output, *In re Japikse*, 86 USPQ 70.

With respect to claims 3 PRIOR ART (Fig 1: 1) shows the substrate made up of sapphire, where waveguides and cladding layers are made of Nitride (Fig 1: 3,4,7,8).

With respect to claims 4-6, 16, 17 the claims further require the upper and lower optical confinement layers are formed of nitride-based material. Since Botez et al. '805 shows the current confinement layer made of phosphate, it is within the general skill of a worker in the art at the time the invention was made to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, to produce different wavelength. *In re Leshin*, 125 USPQ 416.

***Allowable Subject Matter***

Art Unit: 2828

3. Claims 7-9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The references of the record fail to teach or suggest:

**Claim 7-9:**

Wherein the upper and lower waveguides are formed of p-GaN and n-GaN, respectively, where the upper and lower cladding are formed of p-AlGaN/p-GaN and n-AlGaN/n-GaN or p-AlGaN and n-AlGaN, respectively, where the active layer is formed of AlInGaN ( $\text{Al}_v\text{In}_x\text{Ga}_{1-x-v}\text{N}/\text{Al}_w\text{In}_y\text{Ga}_{1-y-w}\text{N}$ ,  $0 \leq v, w, x, y \leq 1$ ,  $0 \leq x+y$ ,  $y+w \leq 1$ ,  $y \leq x$ ,  $v \leq w$ ).

***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

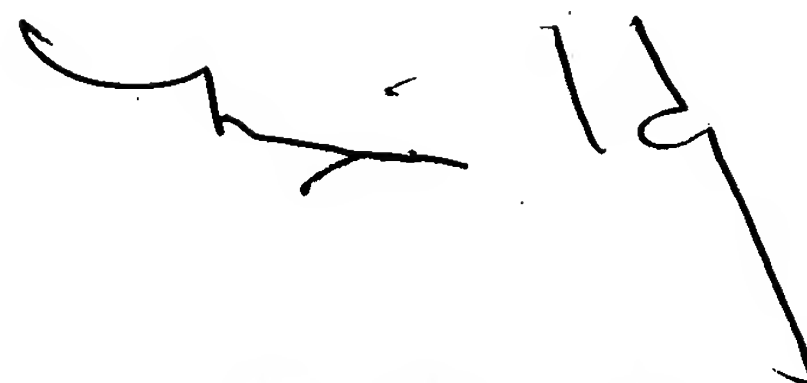
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/624,687  
Art Unit: 2828

Page 5

Tuan N. Nguyen

A handwritten signature in black ink, appearing to read "Tuan Nguyen", with a long horizontal flourish extending to the right.A handwritten signature in black ink, appearing to read "Minsun Oh", with a long diagonal flourish extending downwards and to the right.

MINSUN OH HARVEY  
PRIMARY EXAMINER